

Delivering Water and Sanitation Services in the 2030 Agenda for Sustainable Development

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Summary

Water and sanitation are at the very core of sustainable development: the 2030 Agenda includes a goal that sets out to “ensure availability and sustainable management of water and sanitation for all” (SDG 6). SDG 6 has strong linkages to the other SDGs. Safe drinking water and adequate sanitation and hygiene are pillars of human health and wellbeing. Water is also needed for food, energy and the production of industrial goods in highly inter-connected and potentially conflicting ways. Non-properly managed wastewater puts healthy ecosystems at risk, which are crucial to keep the quantity and quality of freshwater, as well as overall resilience to climate change. Integrated water resource management is essential in order to harness synergies as well as to manage potential trade-offs, to ensure availability and sustainable management of water and sanitation for all.

This paper builds and expands on the lessons learned during the parallel session entitled “SDG 6: Clean Water and Sanitation” of the International Conference on Sustainable Development Goals: Actors and Implementation, held in Barcelona, Catalonia from 18th to 19th September 2017. It takes the interlinked and interdependent nature of SDG 6 as its starting point, and discusses the challenges for successful fulfilment of the global targets dedicated to water, sanitation and hygiene (WaSH). This is needed, since there is otherwise a risk of adopting a fragmented approach - investing time and resources in trying to implement isolated and limited development initiatives -, without addressing the existing and still open sets of questions on how best to provide universal WaSH services.

Introduction

Water and sanitation are at the very core of sustainable development, critical to the survival of people and the planet. Safe drinking water, adequate sanitation and hygiene are integral to our social, environmental and cultural commons, being pillars of human health, human dignity and well-being.

In September 2015, the United Nations Member States committed themselves to ensuring universal access to safe drinking water and to sanitation in Goal 6 of the 2030 Agenda for Sustainable Development - SDG 6 (United Nations General Assembly, 2014). The achievement of this Goal requires adequate investment in infrastructure, provision of sanitation facilities, and hygiene promotion at every level. Protection and restoration of water-related ecosystems such as forests, mountains, wetlands and rivers is also essential to mitigate water scarcity. And more international cooperation is needed to encourage water efficiency and support treatment technologies in developing countries (United Nations World Water Assessment Programme (WWAP), 2015).

The 2030 Agenda stresses the universal, interdependent and mutually reinforcing nature of the SDGs (United Nations General Assembly, 2015). It is recognised that the achievement of the 2030 Agenda and its Goals and Targets will only be possible through an integrated approach. Therefore, fully understanding and managing the linkages, that is, maximizing synergies and minimizing trade-offs by working across traditional institutional structures, are key challenges for many governments and development partners (UN Water, 2016a). However, important interactions and interdependencies are generally not explicit in the description of the goals or their associated targets, and they require adequate identification (Griggs et al., 2017).

In particular, both A. Jiménez (2017) and E. Bergés (2017) stated in their intervention that many of the SDG targets related to social and economic development both depend on and support a sustainable, reliable water supply of adequate quality and quantity; therefore, these targets and the targets under Goal 6 are interdependent (Griggs et al., 2017; UN Water, 2016a). There are strong linkages between Goal 6 and the social dimensions of sustainable development (UN Water, 2016a). For instance, clear synergies exist between the targets of universal access to water supply, sanitation and hygiene (WaSH) services [Targets 6.1, 6.2] and wastewater treatment [6.3], and reducing multidimensional poverty [Goal 1], improving nutrition [2], and achieving universal access to health

[3] and education services [4]. There are also strong interdependencies between the economic dimensions of the 2030 Agenda and Goal 6 (UN Water, 2016a). An adequate and reliable supply of water [6.1, 6.4] is essential for many economic activities [8], infrastructure and industrial development [9], cities and communities [11] and sustainable consumption and production [12]. Access to WaSH services [6.1, 6.2] and wastewater treatment [6.3] also support a healthy, educated and productive workforce. Finally, water is a prerequisite to all life on Earth and the foundation of all of its ecosystems (UN Water, 2016a). To take one example, synergies are obvious between the Goals on consumption and production [12], oceans [14] and ecosystems [15], and Goal 6, especially with regard to water quality and wastewater management (reduction, reuse and recycling) [6.3]. And on top of that, implementing IWRM [6.5] mutually reinforces targets for awareness-raising on climate change [13.3], and integrating climate change and ecosystem values into development processes [13.2, 15.9]; while addressing climate change supports the targets for water scarcity [6.4], water quality [6.3] and ecosystems [6.6, 15.1].

In all, cutting across sectors and regions, water is instrumental in the implementation of integrated development solutions. However, its highly interlinked nature also makes the water sector fragmented, calling for a high level of coordination between a wide variety of sector and non-sector stakeholders. Moreover, indicators are sector-specific, and they will not provide the framework needed for an integrated approach across multiple objectives. As suggested by A. Jiménez in his presentation, a narrow focus on the indicators poses a risk to an excessive compartmentalization of development initiatives, which may broaden the existing gap between the indicators, the targets and the Agenda (Jiménez-Fdez de Palencia, 2017). It is therefore important not to lose sight of the scope and systemic nature of the global priorities and objectives, which are fundamentally interdependent (Griggs et al., 2017).

Building on this, this article further discusses the challenges for successful fulfilment of SDG 6. The focus is particularly on those targets dedicated to water, sanitation and hygiene (WaSH), which have been selected as initial case studies for various reasons. As cited above, increasing access to drinking water, sanitation and hygiene in homes, healthcare facilities, schools and workplaces underpins other development goals relating to end of poverty, healthy lives, gender equality, sustainable growth, reduction of inequalities and sustainable cities, among others (UN Water, 2016a, 2016b). In addition,

there is broad and growing support for the realization of the Human Right to Water and Sanitation (HRTWS) among UN member states (Flores Baquero et al., 2013; United Nations General Assembly, 2010). And despite significant progress in recent years, much still remains to be done: in 2015, 844 million people still lacked a basic drinking water service, and 2.3 billion people lacked improved sanitation facilities (Joint Monitoring Programme, 2017).

Monitoring drinking Water, Sanitation and Hygiene in the global agenda

The new dedicated goal on water and sanitation (SDG 6) expands the Millennium Development Goals' (MDGs) focus on drinking water and sanitation to cover the entire water cycle, including the management of water, wastewater and ecosystem resources. Specifically, this goal contains eight targets: six on outcomes, and two on the means of implementing these outcomes. Three out of six "technical" targets are proposed with a specific focus on drinking water, sanitation and hygiene, as summarized in Table 1. Targets 6.1 and 6.2 relate to drinking water and sanitation, respectively. Targets 6.2 and 6.3 expand the framework beyond the use of sanitation facilities to cover the full sanitation chain. In addition, two cross-cutting targets focus on the means to achieve the water and sanitation targets. Target 6.a expands international cooperation and capacity building support, and Target 6.b strengthens the participation of local communities in improving water and sanitation management.

In order to report progress towards SDG Targets 6.1 and 6.2, the need is proposed to build on and expand the existing water and sanitation "ladders" (Joint Monitoring Programme, 2015). In his remarks, R. Giné (2017) highlighted that key new developments include the establishment of a new higher threshold of service for drinking water and sanitation (termed "safely managed"), and the addition of a specific ladder for hygiene (handwashing). The proposed drinking water ladder distinguishes between safely managed services, basic services, unimproved and no service (surface water); sanitation is disaggregated into safely managed services, basic services, shared facilities, unimproved facilities and open defecation; and the hygiene ladder separately reports on basic facilities, unimproved and no facilities. The underlying idea behind improving service levels is not only to increase the number of people with access, but also to promote progressive improvements in the quality of services, based on the content of the human right to water and sanitation (Flores Baquero et

al., 2016; Giné-Garriga et al., 2017; Heller, 2017a; Joint Monitoring Programme, 2015). To put these ladders in a functional framework, global and national estimates of safe management of water and sanitation services will be computed by making the best use of available information. The intention is to generate “compliance” factors that, for instance, describe “the proportion of water technologies that are compliant with regulatory quality standards”; and also a number of “safety” factors that help estimate “the proportion of domestic wastewater (sewage and faecal sludge) that is safely managed and treated based on sanitation facility types used” based on “the proportion of untreated wastewater that enters the environment, including direct discharge into the environment, leakage during emptying and transportation, or inadequate treatment leading to unsafe disposal or reuse” (Joint Monitoring Programme, 2015). These factors will be assessed at a national level, and they will either come from actual country situations, literature reviews, focused studies or in-country consultation. They will ultimately be combined with country estimates on the use of various drinking water and sanitation facilities, derived primarily from household surveys.

Key Challenges in Delivering Water and Sanitation Services for All

The SDG targets for drinking water and sanitation imply a transformation in current approaches to service delivery. The underlying message, proposed by A. Jiménez in his speech, is simple: “we need to do things differently, and we need to do different things” (Jiménez-Fdez de Palencia, 2017). This section examines the main challenges faced by the international community for providing sustainable and equitable WaSH services for all.

The need for increased participation and stronger alliances between the public sector, the private sector and civil society

M. García started his presentation by noting that the sector needs improved cooperation and stronger alliances between the government and key sector partners, including the private sector and civil society (García, 2017). Innovative frameworks should therefore be promoted for policy dialogue and the exchange of project ideas, experiences and best practices among sector stakeholders. In this regard, large efforts have been undertaken in recent years to promote private sector participation in, and pri-

Table 1 Indicator framework for monitoring SDG targets on drinking water, sanitation and hygiene post-2015.

Target	Indicator	Key elements
Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Percentage of population using safely managed drinking water services	<ul style="list-style-type: none"> - a basic drinking water source (MDG “improved” indicator), - which is located on premises, - available when needed, and - compliant with faecal and priority chemical standards
Target 6.2: By 2030, achieve adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	Percentage of population using safely managed sanitation services	<ul style="list-style-type: none"> - a basic sanitation facility (MDG ‘improved’ indicator), - which is not shared with other households, and - where excreta are safely disposed in situ or transported and treated off-site
	Percentage of population with handwashing facilities with soap and water at home	<ul style="list-style-type: none"> - a device to contain, transport or regulate the flow of water to facilitate handwashing
Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Percentage of wastewater safely treated	<ul style="list-style-type: none"> - underscores the importance of treating wastewater as a dominant source of water pollution, and relates to wastewater generated both through households and economic activities. It will exploit, in part, information generated for the sanitation indicator of Target 6.2

Source: Joint Monitoring Programme (2015b) and United Nations General Assembly (2014)

vate financing of, the implementation of SDG 6 (Bergés, 2017). However, the debate on the role of privatization in promoting universal access to safely managed services has rarely adopted a human rights-based approach. It is necessary to ensure monitoring and accountability for all stakeholders and to strengthen the role of States as the primary duty bearers for guaranteeing the rights of individuals and communities.

In the same priority line, it should be pointed out that effective water and sanitation management depends on the participation of a range of stakeholders, including local communities. As A. Jiménez pointed out, Target 6.b deals with this priority issue (Jiménez-Fdez de Palencia, 2017). He explained how, according to the last Global Analysis and Assessment of Sanitation and Drinking Water survey, over three quarters of countries surveyed reported that procedures for stakeholder participation were clearly defined in law or policy (World Health Organization, 2017). However, effective levels of participation remain comparatively low: less than one quarter of countries report a high level of participation.

The need for governance, indicators and a coherent framework for global monitoring of SDG 6

The experience of the MDGs underscores the importance of thinking through the indicators as early as possible (Sustainable Development Solutions Network, 2015). Indeed, indicators will be the backbone of monitoring progress towards the SDGs at the local, national, regional and global levels. A lesson learnt from the MDGs is that we cannot manage what we do not measure, and what gets measured is far more likely to get done. It is therefore necessary to identify and apply specific, measurable and action-oriented indicators to turn the SDGs and their targets into a management tool to help countries develop implementation strategies and allocate resources accordingly (Hák et al., 2016; Sustainable Development Solutions Network, 2015).

As previously mentioned, Targets 6.1 and 6.2 call for universal access to drinking water, sanitation and hygiene. The key shifts necessary for transitioning from the MDGs to the SDGs include a focus on sanitation and hygiene, the reduction of inequalities, increasing service levels, addressing WaSH issues beyond the household, and improving the sustainability of services (Joint Monitoring Programme, 2015). Monitoring these targets therefore requires a significant increase in the data that is accurate, timely and available to governments, managers, civil society and international organisations. Despite the significant progress achieved during the MDGs, there are still

huge data and knowledge gaps to adequately address some of the biggest sustainable development challenges, and many people and groups are still uncounted (Independent Expert Advisory Group on a Data Revolution for Sustainable Development, 2014). It will take many years before the official SDG indicator framework is underpinned by comprehensive data (Sachs et al., 2016). And even when data are available, a major drawback is that they are often years out of date, hindering the capacities of countries to set priorities for early action (Sachs, 2012).

In his intervention, R. Giné summarized three main problems to address (Giné-Garriga, 2017), which have been largely discussed elsewhere in the literature (Heller, 2017b; Independent Expert Advisory Group on a Data Revolution for Sustainable Development, 2014; Joint Monitoring Programme, 2017):

There are not enough high-quality data. Today, too many countries still have poor data, data arrives too late and too many issues are still barely covered by existing data. In their last report, the JMP identifies major data gaps, and highlights that effective monitoring of WaSH services during the SDG era will require significant improvements in the availability and quality of data. To name but a few examples: i) multiple definitions of 'Open Defecation Free' hinders the establishment of comparable baseline estimates, ii) incomplete data on excreta management in on-site systems challenges accurate monitoring of Target 6.2, and ii) important data gaps also exist for sewerage systems, such as the amount of excreta that is lost in transport, and the amount of excreta that bypasses treatment plants or is discharged without receiving at least secondary treatment (Joint Monitoring Programme, 2017). It is quite clear that governments will need to invest in a real-time reporting system for the SDGs to produce high quality data on a range of new issues, ensuring that no groups are excluded, with an unprecedented level of detail, and with no more than a yearly, if not quarterly, time lag (Independent Expert Advisory Group on a Data Revolution for Sustainable Development, 2014; Sachs, 2012).

Monitoring systems should be consistently aligned with the normative content of the human rights to water and sanitation and the principles of the human rights. This was clearly stated by the Special Rapporteur on the human rights to safe drinking water and sanitation in his speech (Heller, 2017a). There is thus a need to rethink indicators and indicator frameworks for measuring sustainable access to water and sanitation services and the enjoyment of this human right in an equitable manner. One illustra-

tive example is that affordability and equality should be treated as an integral part of the indicator's definition of "safely managed" services, and not as an additional, complementary aspect of monitoring (Heller, 2017b).

Data are not used in policy-making. To cover the link between data availability and data use, a huge increase in the capacity of many governments, companies, institutions and individuals will be needed to deliver and use this data (Sustainable Development Solutions Network, 2015). Data must be of high quality, at a level of disaggregation that is appropriate to the issue at hand, and must be made accessible to those who want or need to use them: experts but also government officials, business, practitioners and civil society, and of course, the public (Independent Expert Advisory Group on a Data Revolution for Sustainable Development, 2014; Sachs et al., 2016). In addition, in contrast to the MDG period - where no intermediate milestones were defined - the 15 years of the SDGs should include intermediate objectives and milestones with clear dates, in order to ensure closer feedback between policies and outcomes (Sachs, 2012).

The need for improved financing mechanisms

The success of the SDGs will need countries worldwide to invest adequately in addressing their challenges. On the one hand, the investments for sustainable development will not be heavy globally speaking, certainly not compared with the massive costs if no investment is made (Sachs, 2012). In particular, extending basic WaSH services to the unserved will cost \$28.4 billion per year from 2015 to 2030. This financing requirement is equivalent, in order of magnitude, to the 0.12 percent of global product spent to serve the unserved with improved water supply and sanitation during the MDG period (Hutton and Varughese, 2016). On the other hand, this relatively modest average cost as a proportion of global product hides wide variations across countries. Significantly greater capital spending is needed, for instance, in Sub-Saharan Africa, where meeting SDG targets on drinking water, sanitation and hygiene will require large investments in terms of finance and resources. Globally speaking, the World Bank has estimated that current levels of financing for WaSH are only sufficient to cover the capital costs of achieving basic universal services by 2030. Meeting SDG Targets 6.1 and 6.2 will require a tripling of capital investments to US\$ 114 billion per year, not to mention operations and maintenance (O&M) costs, which are key for sustainable services (Hutton and Varughese, 2016).

In this regard, in addition to the global costs - where the financing priorities are - the issue of service affordability

needs to be addressed, specifically for the poor. Households are likely to pay part or the full recurrent (O&M) costs, and tariff policies need to be balanced against affordability. Both M. García (2017) and E. Bergés (2017) indicated in their remarks that not all populations will be able to afford the water and sanitation tariffs, and thus targeted financing will be needed for those households. This may require a better selection of quality and affordable technology options than they now have (Hutton and Varughese, 2016). Moreover, failing to tackle inequalities globally will add hundreds of billions of dollars to the spending needed to end poverty: failure to tackle inequality will mean failure to deliver the SDGs (Martin and Walker, 2015). Therefore, additional efforts are required to reach vulnerable groups, including poor populations and communities living in remote areas or informal settlements. A large number of countries report having specific pro-poor measures in their WaSH policies and plans. However, the implementation of such concrete measures remains elusive: few countries are able to consistently apply financing measures to target resources to poor populations. Furthermore, while "reducing inequalities" was considered a very high priority for two thirds of external support agencies (ESAs), aid to basic systems (as a proxy for aid targeted at unserved populations, particularly in rural areas) was only 25% of WaSH aid disbursements in 2015. Increasing and sustaining WaSH access for vulnerable groups will not only be critical for achieving SDG 6, but also for other poverty-related SDGs (World Health Organization, 2017).

In financial terms, the MDGs relied on "voluntary" financing mechanisms, notably the foreign aid outlays voted by each parliament. However, very few countries have fulfilled the recommendation to give 0.7% of their gross national income (GNI) to official development assistance (ODA). It is against this backdrop that SDG 6 integrates one specific indicator to monitor the amount of water -and sanitation- related ODA that is part of a government-coordinated spending plan. Nonetheless, as recalled by M. García in his speech, the transition from the MDG to the SDG era calls for a notable departure from business as usual (García, 2017). The aspirational and ambitious goals and targets that make up the SDG framework requires a new take on development policies, plans and programmes, and on means of implementation (World Health Organization, 2017). At the same time, there is also a need to focus concessional flows on those countries with the greatest needs, i.e. low- and lower-middle income countries and countries in "special situations" - such as fragile and conflict-affected, least developed, landlocked and small island states (Martin and Walker, 2015). Other inno-

vative financing mechanisms will be needed to finance the SDGs, and countries should agree on transparent and specific standards of financing (Sachs, 2012).

Last but not least, there is a need for dramatic improvement in the effectiveness of financing, as it is not only an issue of increasing public spending. Public spending often does not yield the expected improvement in outcomes, particularly in countries where the level of governance is poor. Indeed, increasing public spending may be an easier policy option than attempting to improve governance, but in the absence of good governance, the easier option frequently does not translate into the expected achievement of better outcomes (Rajkumar and Swaroop, 2008).

The issue of inclusiveness: No one must be left behind

The 2030 Agenda focuses strongly on reducing inequality, with many goals designed to 'leave no one behind', and states that SDG indicators should be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location (United Nations General Assembly, 2015). Similarly, from a human rights perspective, the concept of progressive realization has often been highlighted. For the SDGs, progressive realization of the human rights to water and sanitation means that all targets should be met in 2030, without leaving anyone behind and by reaching those who are furthest behind first (Joint Monitoring Programme, 2016). As recalled by the Special Rapporteur in his presentation, progressive realisation goes hand-in-hand with progressive reduction of inequality (Heller, 2017a).

The JMP has been monitoring inequalities in drinking water, sanitation and hygiene since 1990. In 2016, the JMP global database was restructured and expanded to incorporate new information required for SDG monitoring, drawing special attention to key human rights elements such as affordability, needs of women/girls and people in vulnerable situations (Joint Monitoring Programme, 2016). Their last report shows that there are not only significant inequalities in basic WaSH services and open defecation between regions and between countries within each region, but also within individual countries between urban and rural areas, subnational regions and wealth quintiles (Joint Monitoring Programme, 2017). For example, Angola has relatively high coverage of basic drinking water compared to other countries in sub-Saharan Africa, but there is a 40 percentage point gap between urban and rural areas and a 65 percentage point gap between the richest and poorest quintiles (Joint Monitoring Programme, 2017).

Remarkably, however, Targets 6.1 and 6.2 universally apply to all, and countries from developed countries will

also need to mobilize efforts to achieve these targets. A paradigm shift is advocated to define the poor and approach the most vulnerable segments of population. The case of Spain is given as an illustrative example. Based on official data (Joint Monitoring Programme, 2017; Sachs et al., 2016), this goal has already been achieved since 100% of the population are covered by improved water sources and improved sanitation facilities. In her speech, however, E. Bergés highlighted that the number of households at risk of water poverty has considerably increased in recent years due to the economic crisis (Bergés, 2017). The Spanish Association of Public Water Supply and Sanitation Operators (AEOPAS) carried out a survey in 2014 to calculate the number of disruptions to water supplies due to non-payment of bills. Results show that cut-off warnings amounted to more than 500,000, i.e. an increase of 30% compared with 2010; the number of disconnections totalling 300,000. As previously mentioned, affordability is likely to be a concern, especially for the poor. If operational costs cannot be covered by tariffs, policy makers and service providers should be aware of the increasing burden on limited grant financing and (cross-) subsidies to operate the services (Hutton and Varughese, 2016). In other words, local governments and the organisms that manage the water and sanitation services should implement a system of aids and subsidies in the water bill to guarantee that poor households benefit from the same high level of service.

In all, the pledge that 'no one must be left behind' requires a focus on the poorest and most vulnerable people, and particularly on reducing their exposure and vulnerability to extreme climate-related events and other economic, social and environmental shocks and disasters. For this to happen, a focus on strengthening resilience is needed to protect development gains and ensure people have the resources and capacities to better reduce, prevent, anticipate, absorb and adapt to a range of shocks, stresses, risks and uncertainties. On the one hand, public and private sector organisations will need to focus more on building the resilience of their infrastructure and systems to disruption from all risks. On the other hand, resilience of societies will need to be enabled and supported against all threats and hazards, in a way that communities and individuals harness local resources and expertise to help themselves during and after an emergency.

The need for increased accountability

A crucial element to promote and accelerate SDG results will be citizens holding governments and donors accountable. The raw material for accountability is high-quality data, providing the right information on the right things

at the right time (Independent Expert Advisory Group on a Data Revolution for Sustainable Development, 2014). For instance, data on public spending and revenue/aid in budget-related documents will allow civil society to track increases in 'means of implementation' for the SDGs (Martin and Walker, 2015).

It is remarkable that throughout the MDG period, the international community has conducted no comprehensive monitoring or analysis of spending. Accountability is expected to increase significantly as part of the data revolution needed to support the SDGs, and a number of initiatives have already been launched in recent years for monitoring public expenses and increasing budget transparency (e.g. Public Spending Observatories, Open Government Data, etc.). This is, in part, the role of the UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS), i.e. to increase the information available to key decision-makers and thereby help to enhance accountability in the sanitation and drinking-water area. In turn, GLAAS should help increase spending levels, finding fraud and fighting corruption.

Conclusions

As we embark on the global journey toward sustainable development, it is vital for the 2030 Agenda for Sustainable Development to be integrated into national planning, and translated into policy at national levels. In this process, however, two preliminary issues should be taken into account: i) the Global Goals should enrich national policy and align with, rather than duplicate, national sustainable development plans; and ii) the focus should be kept on these global priorities, avoiding the risk of "compartmentalizing" the interlinked and interdependent nature of the Goals and the Agenda.

With a dedicated goal on water and sanitation, this paper adopts the position that achieving sustainable and equitable access to WaSH services will be extremely challenging. In particular, the aim of this paper is to explore the linking process between the SDGs and the targets under Goal 6, to provide a better understanding of the current and emerging challenges in respect of sustainable delivery of WaSH services. This is needed, since there is otherwise a risk of adopting a fragmented approach - investing time and resources in trying to implement isolated and limited development initiatives -, without addressing the existing and still open sets of questions on how best to provide universal access to safe drinking water, sanitation and hygiene.

References

- Bergés, E., 2017. The service provider: challenges & opportunities, in: International Conference on Sustainable Development Goals: Actors and Implementation. Global University Network for Innovation, Barcelona.
- Flores Baquero, O., Jiménez, A., Pérez Foguet, A., 2013. Monitoring access to water in rural areas based on the human right to water framework: a local level case study in Nicaragua. *Int. J. Water Resour. Dev.* 29, 605–621. doi:10.1080/07900627.2012.757017
- Flores Baquero, O., Jiménez Fdez. de Palencia, A., Pérez Foguet, A., 2016. Measuring disparities in access to water based on the normative content of the human right. *Soc. Indic. Res.* 127, 741–759. doi:10.1007/s11205-015-0976-8
- García, M., 2017. Case Study: WaSH in the Euro-Mediterranean region, in: International Conference on Sustainable Development Goals: Actors and Implementation. Global University Network for Innovation, Barcelona.
- Giné-Garriga, R., 2017. Monitoring Drinking Water, Sanitation and Hygiene in the SDGs: indicators, challenges and opportunities, in: International Conference on Sustainable Development Goals: Actors and Implementation. Global University Network for Innovation, Barcelona.
- Giné-Garriga, R., Flores-Baquero, Ó., Jiménez-Fdez de Palencia, A., Pérez-Foguet, A., 2017. Monitoring sanitation and hygiene in the 2030 Agenda for Sustainable Development: A review through the lens of human rights. *Sci. Total Environ.* 580, 1108–1119. doi:10.1016/j.scitotenv.2016.12.066
- Griggs, D.J., Nilsson, M., Stevance, A., McCollum, D., 2017. A Guide to SDG Interactions: from Science to Implementation. Paris. doi:10.24948/2017.01
- Hák, T., Janoušková, S., Moldan, B., 2016. Sustainable Development Goals: A need for relevant indicators. *Ecol. Indic.* doi:10.1016/j.ecolind.2015.08.003
- Heller, L., 2017a. Los derechos humanos al agua y al saneamiento, in: International Conference on Sustainable Development Goals: Actors and Implementation. Global University Network for Innovation, Barcelona.

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- Heller, L., 2017b. Open Letter from the United Nations Special Rapporteur on the human rights to safe drinking water and sanitation, Mr. Léo Heller, to the WHO-UNICEF Joint Monitoring Programme for WaSH (ref. SPB/SHD/AL/pg).
- Hutton, G., Varughese, M., 2016. The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene. Washington D.C.
- Independent Expert Advisory Group on a Data Revolution for Sustainable Development, 2014. A World That Counts: Mobilising The Data Revolution for Sustainable Development. New York and Geneva.
- Jiménez-Fdez de Palencia, A., 2017. Overview of Water in the SDGs, in: International Conference on Sustainable Development Goals: Actors and Implementation. Global University Network for Innovation, Barcelona.
- Joint Monitoring Programme, 2017. Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG Baselines. Geneva.
- Joint Monitoring Programme, 2016. Report of the JMP Technical Task Force Meeting on Monitoring Inequalities for the 2030 Sustainable Development Agenda. New York and Geneva.
- Joint Monitoring Programme, 2015. JMP Green Paper: Global monitoring of water, sanitation and hygiene post-2015. New York and Geneva.
- Martin, M., Walker, J., 2015. Financing the Sustainable Development Goals: Lessons from Government Spending on the MDGs. Washington D.C.
- Rajkumar, A.S., Swaroop, V., 2008. Public spending and outcomes: Does governance matter? J. Dev. Econ. 86, 96–111. doi:10.1016/j.jdeveco.2007.08.003
- Sachs, J., Schmidt-Traub, G., Kroll, C., Durand-Delacre, D., Teksoz, K., 2016. SDG Index and Dashboards - Global Report. New York.
- Sachs, J.D., 2012. From millennium development goals to sustainable development goals. Lancet 379, 2206–11. doi:10.1016/S0140-6736(12)60685-0
- Sustainable Development Solutions Network, 2015. Indicators and a Monitoring Framework for the Sustainable Development Goals: Launching a data revolution for the SDGs. Paris and New York.
- UN Water, 2016a. Water and Sanitation Interlinkages across the 2030 Agenda for Sustainable Development. Geneva.
- UN Water, 2016b. Monitoring Water and Sanitation in the 2030 Agenda for Sustainable Development. An introduction. Geneva, Switzerland.
- United Nations General Assembly, 2015. Transforming our world: the 2030 Agenda for Sustainable Development. Resolution A/RES/70/1.
- United Nations General Assembly, 2014. Report of the Open Working Group of the General Assembly on Sustainable Development Goals. Resolution A/68/970.
- United Nations General Assembly, 2010. The human right to water and sanitation. Resolution A/RES/64/292.
- United Nations World Water Assessment Programme (WWAP), 2015. The United Nations World Water Development Report 2015: Water for a Sustainable World. Paris.
- World Health Organization, 2017. UN-Water global analysis and assessment of sanitation and drinking-water (GLAAS) 2017 report: financing universal water, sanitation and hygiene under the sustainable development goals, WHO. Geneva. doi:CC BY-NC-SA 3.0 IGO.
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